

### **REMARKS**

Claims 1-39 are currently pending in the subject application and are presently under consideration. Claims 1, 13, 22 and 34 have been amended as shown on pp. 2-6 of the Reply. Claim 36 has been canceled.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

#### **I. Rejection of Claims 13-19 Under 35 U.S.C. §102(e)**

Claims 13-19 stand rejected under 35 U.S.C. §102(e) as being anticipated by Wang *et al.* (US Patent 6,907,433). It is respectfully requested that this rejection should be withdrawn for at least the following reasons. Wang *et al.* does not teach or suggest each and every element as set forth in the subject claims.

A single prior art reference anticipates a patent claim only if it expressly or inherently describes each and every limitation set forth in the patent claim. *Trintec Industries, Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 63 USPQ2d 1597 (Fed. Cir. 2002); *See Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the ... claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Applicants' claimed subject matter relates to a system and method to facilitate mapping between disparate domain models such as an object oriented programming model and a relational database model. Specifically, the system discloses an object schema component that provides a mechanism for providing a bridge between a transient graph of objects and a related persistent data store. In particular, the object schema provides metadata describing a given set of classes in addition to a program assembly containing type definitions. The metadata can subsequently be utilized by a mapping system to translate relational data to and from user objects during a materialization or persistence process. Independent claim 13 recites: an object schema generation system comprising: *a code reader component adapted to read code from a program or set of programs; an object schema generation component that retrieves or is provided with code from the code reader component and produces an object schema which provides metadata concerning objects to facilitate persistence of object data to a data store, wherein the generated*

*object schema is utilized together with a relational schema and a mapping schema to map object data to tables in the data store; and wherein the mapping schema provides the mapping between the object schema and the relational schema, and the relational schema utilizes metadata associated with the data store to generate an implementation specific format that represents the data store structure.* Wang *et al.* does not expressly or inherently disclose the aforementioned novel aspects of applicants' claimed subject matter as recited in the subject claims.

Wang *et al.* discloses a system for managing object to relational, one-to-many mapping. The system uses mapping of meta-data to generate instructions to manipulate target objects and relationships in a relational database. The mapping of meta-data contains information as to how object classes of the object model map to tables in the database and how relationships map to foreign keys. (See col. 2, lines 3-25).

In contrast, applicants' claimed subject matter discloses a system for mapping object components to relational components. The object schema of the system provides one portion of a three-part mapping. The other two schema components are a mapping schema and a relational schema. The object schema component describes data classes as well as relations there between as specified in an object-oriented model, for example. Relational schema component contains information describing tables and associated data records in a relational database model, for instance. Specifically, the relational schema component can utilize metadata associated with a database to generate an implementation neutral or implementation specific format that represents the precise database structure and data. Mapping schema component provides the mapping between the object schema and the relational schema. The disclosed system is advantageous at least in that applications do not need to be rebuilt and redeployed if the manner in which data is persisted changes, for example if table names change or tables are broke up into smaller tables. Rather the appropriate schema components can be easily modified to effectuate such alternations. (See pg. 9, line 30-pg. 10, line 26).

Wang *et al.* merely discloses a class mapping tool that is utilized to map the three object classes (Employee, Address and Phone Number) of the object model to three tables in a relational database. Wang *et al.* does not disclose a system wherein an object schema, a mapping schema and a relational schema provide a three-part mapping. Accordingly, Wang *et al.* is silent with regard to an object schema generation system, *wherein the generated object schema is*

*utilized together with a relational schema and a mapping schema to map object data to tables in the data store; and wherein the mapping schema provides the mapping between the object schema and the relational schema, and the relational schema utilizes metadata associated with the data store to generate an implementation specific format that represents the data store structure.*

In view of at least the above, it is readily apparent that Wang *et al.* fails to expressly or inherently disclose applicants' claimed subject matter as recited in independent claim 13 (and claims 14-19 which depend there from). Accordingly, it is respectfully requested that these claims be deemed allowable.

## **II. Rejection of Claims 20 and 21 Under 35 U.S.C. §103(a)**

Claims 20 and 21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wang *et al.*, in view of Koller *et al.* (US Patent Publication 2002/0103793). It is respectfully submitted that this rejection should be withdrawn for the following reasons. Wang *et al.* and Koller *et al.*, individually or in combination, do not teach or suggest each and every element set forth in the subject claims. In particular, Koller *et al.* does not make up for the aforementioned deficiencies of Wang *et al.* with respect to independent claim 13 (which claims 20 and 21 depend there from). Thus, the claimed subject matter as recited in claims 20 and 21 is not obvious over the combination of Wang *et al.* and Koller *et al.*, and withdrawal of this rejection is requested.

## **III. Rejection of Claim 1-12 and 22-39 Under 35 U.S.C. §103(a)**

Claims 1-12 and 22-39 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wotring *et al.* (US Patent 6,853,997) in view of Wang *et al.* It is respectfully submitted that this rejection should be withdrawn for the following reasons. Wotring *et al.* and Wang *et al.*, individually or in combination, do not teach or suggest each and every element set forth in the subject claims.

To reject claims in an application under §103, an examiner must show an un rebutted *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference

teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *See* MPEP §706.02(j). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicants' disclosure. *See In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicants' claimed subject matter relates to a system and method to facilitate mapping between disparate domain models such as an object oriented programming model and a relational database model. Specifically, the system discloses an object schema component that provides a mechanism for providing a bridge between a transient graph of objects and a related persistent data store. Independent claims 1, 22 and 34 recite similar limitations, namely: a computer executable data structure comprising: *a first data structure that describes one or more classes which define programmatic objects; a second data structure that describes members of each class; and a third data structure that describes relationships between objects, wherein the described classes, members, and relationships provide information that can be utilized by a computer to persist object data to a database, wherein an object schema is generated and utilized together with a relational schema and a mapping schema to map the programmatic objects to tables in the database; and wherein the mapping schema provides the mapping between the object schema and the relational schema, and the relational schema utilizes metadata associated with the database to generate an implementation specific format that represents the database structure.* Wotring *et al.* and Wang *et al.*, individually or in combination, fail to teach or suggest such aspects of the claimed subject matter.

Wotring *et al.* discloses a system and method for allowing data to be shared without requiring that the data be remodeled to fit a common format or convention. The users of the data may keep their own data formats and may dynamically transform the data contained in their structure into a structure compatible with another definition without having to physically change their data or its structure. Specifically, the data is transformed from a Relational Database Management System (RDBMS) to a hierarchical format. Since RDBMS information is stored in separate tables joined through a specified key structure, information needs to be repackaged as a whole for use in data communication across a local area network (LAN), or a wide area network (WAN). The system discloses transforming data stored in relational format into a hierarchical

format, such as a markup language. As information is transformed into the hierarchical structure from a RDMBS, the information then assumes the hierarchical representation of the logical records contained in the database. (See col. 2, line 63-col. 3, line 52).

In contrast, applicants' claimed subject matter discloses a system for mapping object components to relational components. The object schema of the system provides one portion of a three-part mapping. The other two schema components are a mapping schema and a relational schema. The object schema component describes data classes as well as relations there between as specified in an object-oriented model, for example. Relational schema component utilizes metadata associated with a database to generate an implementation neutral or implementation specific format that represents the precise database structure and data. Mapping schema component provides the mapping between the object schema and the relational schema. (See pg. 9, line 30-pg. 10, line 26).

Whereas, Wotring *et al.* merely discloses transforming data stored in relational format into a hierarchical format such as a markup language. The system provides for mapping each of the plurality of elements in the hierarchical data entity to information in a relational dataset, and transforming the relational dataset into corresponding mapped elements in the hierarchical data entity to form a hierarchical data structure. Wotring *et al.* does not disclose providing information that can be utilized by a computer to persist object data to a database. Accordingly, Wotring *et al.* is silent with regard to a computer executable data structure, *wherein an object schema is generated and utilized together with a relational schema and a mapping schema to map the programmatic objects to tables in the database; and wherein the mapping schema provides the mapping between the object schema and the relational schema, and the relational schema utilizes metadata associated with the database to generate an implementation specific format that represents the database structure.*

Wang *et al.* does not make up for the aforementioned deficiencies of Wotring *et al.* with respect to independent claims 1, 22 and 34 (which claims 2-12, 23-33 and 35-39 depend there from). Wang *et al.* discloses a system for managing object to relational, one-to-many mapping. The system uses mapping of meta-data to generate instructions to manipulate target objects and relationships in a relational database. The mapping of meta-data contains information as to how object classes of the object model map to tables in the database and how relationships map to foreign keys. (See col. 2, lines 3-25).

As stated *supra*, applicants' claimed subject matter discloses a system for mapping object components to relational components. The object schema of the system provides one portion of a three-part mapping. The other two schema components are a mapping schema and a relational schema, wherein the mapping schema component provides the mapping between the object schema and the relational schema. (See pg. 9, line 30-pg. 10, line 26). Wang *et al.* merely discloses a class mapping tool that is utilized to map the three object classes (Employee, Address and Phone Number) of the object model to three tables in a relational database. Accordingly, Wang *et al.* is silent with regard to computer executable data structure, ***wherein an object schema is generated and utilized together with a relational schema and a mapping schema to map the programmatic objects to tables in the database.***

Thus, the combination of Wotring *et al.* and Wang *et al.* does not teach the claimed subject matter. In view of the aforementioned deficiencies of Wotring *et al.* and Wang *et al.*, it is respectfully submitted that this rejection be withdrawn with respect to independent claims 1, 22 and 34 (which claims 2-12, 23-33 and 35-39 depend respectively there from).

**CONCLUSION**

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [MSFTP567US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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